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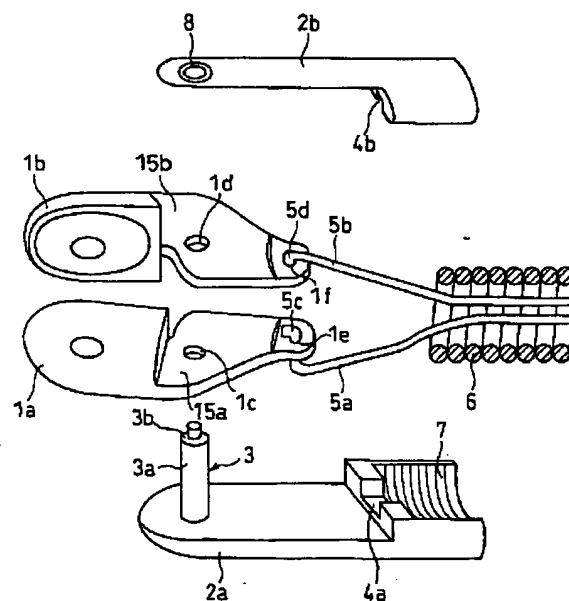
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## (54)【発明の名称】内視鏡用処置具の製造方法

## (57)【要約】

【課題】 本発明は、一連の簡略な組立工程を採用し、生産性向上、製造コスト低減が可能である内視鏡用処置具の製造方法を提供する。

【解決手段】 一对の鉗子カップ1a、1bを、コイルパイプ6に変位可能に挿通された一对の操作ワイヤ5a、5bにより開閉操作する内視鏡用処置具の製造方法において、一对の操作ワイヤ5a、5bの先端部を一对の鉗子カップ1a、1bの後端部に各々連結する工程と、一方の先端カバー2aに設けたピン3に前記一对の鉗子カップ1a、1bに設けた軸穴1c、1dを順に挿通し前記ピン3により開閉可能に支持する工程と、一对の鉗子カップ1a、1bのカップ部を露出させた状態で、他方の先端カバー2bに設けた穴8を前記ピン3の突出端に連結することで一对の先端カバー2a、2bにより一对の鉗子カップ1a、1b及びコイルパイプ6の端部を挟み込み、一对の先端カバー2a、2bの接合部が合致した状態とする工程と、前記一对の先端カバー2a、2bの接合部を一体的に固着する工程とを含むものである。



## 【特許請求の範囲】

【請求項 1】 一対の鉗子カップを、コイルパイプに変位可能に挿通された一対の操作ワイヤにより開閉操作する内視鏡処置具の製造方法において、

前記一対の操作ワイヤの先端部を一対の鉗子カップの後端部に各々連結する工程と、

一対構成の先端カバーにおける一方の先端カバーに設けた支軸に前記操作ワイヤが連結された一対の鉗子カップに設けた軸穴を順に挿通し前記支軸により開閉可能に支持する工程と、

一対の鉗子カップのカップ部を露出させた状態で、他方の先端カバーに設けた穴を前記支軸の突出端に連結することで前記一対の先端カバーにより一対の鉗子カップ及びコイルパイプの端部を挟み込み、一対の先端カバーの接合部が合致した状態とする工程と、

前記一対の先端カバーの接合部を一体的に固着する工程と、

を含むことを特徴とする内視鏡用処置具の製造方法。

【請求項 2】 前記一方の先端カバーから突出させた支軸は、一対の鉗子カップの軸穴が嵌装される太径部と、他方の先端カバーの穴に連結される細径部とからなる段付形状であることを特徴とする請求項 1 記載の内視鏡用処置具の製造方法。

【請求項 3】 前記一対の先端カバーの後端側内周部には、各々前記コイルパイプ装着用のコイル状溝が形成されていることを特徴とする請求項 1 又は 2 記載の内視鏡用処置具の製造方法。

【請求項 4】 前記先端カバーにおける鉗子カップと対向する側の面にその開閉方向に沿った突起が形成されていることを特徴とする請求項 1 乃至 3 のいずれかに記載の内視鏡用処置具の製造方法。

## 【発明の詳細な説明】

## 【0001】

【発明が属する技術分野】本発明は、生検鉗子等の内視鏡用処置具の製造方法に関するものである。

## 【0002】

【従来の技術】図 6 は従来の内視鏡用生検鉗子の先端部を示す。図 6 に示す内視鏡用生検鉗子において、101a、101b は組織片を採取するための一対のカップで、ピン 103 によって開閉自在に先端カバー 102 に取り付けられている。

【0003】先端カバー 102 のカップ挿入部 104 は、円柱状の素材を前側より縦方向にスリット状に二分割した形状に形成され、後端部 105 は筒状に形成されてコイルパイプ 106 に連結されている。

【0004】操作ワイヤ 108 は、リンク機構 107 を介してカップ 101a、101b に連結されており、この操作ワイヤ 108 の進退動作により一対のカップ 101a、101b がピン 103 を支軸として開閉動作するようになっている。

【0005】一般的には、先端カバー 102 は円柱状の素材から切削加工により形成されており、このようなピン 103 と先端カバー 102、コイルパイプ 106 と先端カバー 102 との固着方法として特開平 6-327682 号公報はロー付け又は半田付けの方法を開示している。

【0006】また、特公平 7-28854 号公報は、先端カバー 102 とピン 103 及び先端カバー 102 とコイルパイプ 106 との固着をレーザー溶着に行う方法を開示している。

【0007】図 7、図 8 に、U. S. Patent 5, 133, 727 号公報に開示された例を示す。図 7、図 8 において、先端カバー 202 は金属製造により形成されており、ピン 203 は先端カバー 202 と一体形成されている。

【0008】この場合のコイルパイプ 206 の先端カバー 202 への組み付けは、コイルパイプ 206 の先端部 207 を細径に加工して先端カバー 202 の後端内部に差込みロー付けすることにより行っている。

【0009】また、操作ワイヤ 205 が各々連結されるカップ 201a、201b は、先端カバー 202 のピン 203 を形成した側とは反対の部分 208 を曲げ開けてカップ 201a、201b をピン 203 に挿入した後、部分 208 を元に戻して、前記ピン 203 と先端カバー 202 の部分 208 をカシメ等で固着している。

## 【0010】

【発明が解決しようとする課題】しかしながら、図 6 に示す内視鏡用生検鉗子の場合、先端カバー 102 のカップ挿入部 104 内に一対の鉗子カップ 101a、101b をピン 103 で支持する組立作業には熟練を要するとともに、一対の鉗子カップ 101a、101b をスムーズに開閉動作をさせるためには、カップ挿入部 104 のスリット幅と鉗子カップ 101a、101b とのクリアランスの設定が重要となり、面倒な組み立て作業が必要となる。

【0011】また、図 7、図 8 に示す例の場合、コイルパイプ 206 と先端カバー 202 との接合でも、コイルパイプ 206 の追加工やロー付け、半田付けといった手作業による組み付け作業が必要で生産性の点で問題が多い。

【0012】本発明は、上記事情に鑑みてなされたものであり、先端カバーの構造を改良し、構成部品の順次組み付けで一連の組立作業を遂行でき、生産性向上、製造コスト低減が可能であり、更には自動化対応も容易な生検鉗子等の内視鏡用処置具の製造方法を提供することを目的とするものである。

## 【0013】

【課題を解決するための手段】請求項 1 記載の発明は、一対の鉗子カップを、コイルパイプに変位可能に挿通された一対の操作ワイヤにより開閉操作する内視鏡処置具

の製造方法において、前記一对の操作ワイヤの先端部を一对の鉗子カップの後端部に各々連結する工程と、一对構成の先端カバーにおける一方の先端カバーに設けた支軸に前記操作ワイヤが連結された一对の鉗子カップに設けた軸穴を順に挿通し前記支軸により開閉可能に支持する工程と、一对の鉗子カップのカップ部を露出させた状態で、他方の先端カバーに設けた穴を前記支軸の突出端に連結することで前記一对の先端カバーにより一对の鉗子カップ及びコイルパイプの端部を挟み込み、一对の先端カバーの接合部が合致した状態とする工程と、前記一对の先端カバーの接合部を一体的に固着する工程とを含むことを特徴とするものである。

【0014】この発明によれば、上述した一对構成の先端カバーを採用することにより、従来切削加工や鋳造加工のような面倒な加工方法で形成していた先端カバーをプレス加工や鍛造加工といった板材からの比較的簡略な加工方法で形成することが可能となり、構成部品の製造コストを低減できる。

【0015】また、分かりやすい方向からの（一方の先端カバー側からの）順次組み付け工程で熟練を要することなく容易に内視鏡用処置具の一連の組み立てを遂行でき、組立工程の簡略化を図れる。

【0016】さらに、上述した組み立て工程の採用により、自動化にも容易に対応でき、品質の安定した内視鏡用処置具を製造することが可能となる。

【0017】請求項2記載の発明は、請求項1記載の内視鏡用処置具の製造方法において、前記一方の先端カバーから突出させた支軸は、一对の鉗子カップの軸穴が嵌装される太径部と、他方の先端カバーの穴に連結される細径部とからなる段付形状であることを特徴とするものである。

【0018】この発明によれば、前記支軸を上述した段付形状とすることで、一对の鉗子カップの開閉操作性を確保しつつ、一对構成の先端カバーの固着を容易に行うことができる。

【0019】請求項3記載の発明は、請求項1又は2記載の内視鏡用処置具の製造方法において、前記一对の先端カバーの後端側内周部には、各々前記コイルパイプ装着用のコイル状溝が形成されていることを特徴とするものである。

【0020】この発明によれば、一对の先端カバーの後端側内周部に各々前記コイル状溝を形成したことにより、前記コイルパイプの一对の先端カバーへの取り付けを容易かつ確実に行うことができる。

【0021】請求項4記載の発明は、請求項1乃至3のいずれかに記載の内視鏡用処置具の製造方法において、前記先端カバーにおける鉗子カップと対向する側の面にその開閉方向に沿った突起が形成されていることを特徴とするものである。

【0022】この発明によれば、前記突起を設けたこと

により、前記先端カバーと鉗子カップとの間のクリアランスを吸収して、一对の鉗子カップを閉じたときの両鉗子カップのカップの刃の横ズレを抑えることが可能となる。

【0023】

【発明の実施の形態】以下、本発明の内視鏡用処置具の製造方法の実施の形態を、図1乃至図5を参照して説明する。

【0024】（実施の形態1）図1は本実施の形態1における内視鏡用処置具の先端部分の組み立て状態の部分断面図である。図2は先端カバーと支軸であるピンとの固着状態の一例を示す部分拡大図である。図3は内視鏡用処置具の先端部分の各構成部品を示す分解斜視図である。

【0025】図1に示す内視鏡用処置具において、一对の先端カバー2a、2bのうちの一方の先端カバー2aには、一对の鉗子カップ1a、1bの開閉用の支軸となるピン3が一体形成により立設されている。

【0026】このピン3は、太径部3a、細径部3bからなる段付き形状となっており、太径部3aは鉗子カップ1a、1bに設けた軸穴1c、1dを貫通し、細径部3bは先端カバー2bに設けた後述する穴8に嵌着され連結される径に設定されている。

【0027】また、ピン3の段付き形状における太径部3aの長さ寸法は、鉗子カップ1a、1bの開閉動作に必要な先端カバー2a、2bに対するクリアランスをもった寸法に設定されている。

【0028】他方の先端カバー2bには、前記ピン3の位置に対応する位置に穴8が形成されており、その形状はピン3の細径部3bとの固着方法によって種々の態様が採用される。

【0029】即ち、図1に示すように先端カバー2bにカシメ部10を形成するカシメ方法を採用する場合には、前記穴8を皿形状に、また、図2に示すようなレーザー光照射による溶着方法を採用する場合には、前記穴8をザグリ穴形状にするものである。これらいずれの場合においても、固着終了後に先端カバー2bの外周側へピン3の突出端が突出しない状態にするものである。

【0030】前記先端カバー2a、2bの各後端部分の内周部には、操作ワイヤ5a、5bを挿通するための切欠凹部4a、4bが設けられ、さらに切欠凹部4a、4bよりも後方部分にはコイルパイプ6の外周と形状が一致するコイル状の内周形状を有するコイル状溝7（先端カバー2b側のコイル状溝7は図示せず）が形成されている。

【0031】また、前記先端カバー2a、2bの外周は、コイルパイプ6を挟みこむ状態でこれら先端カバー2a、2bを組み付けたときに接合部12が接合状態となって円筒状を呈するように形成されている。

【0032】このような形状をした一对の先端カバー2

a、2bの形成方法としては、例えば鍛造、プレス、鋳造、MIM（メタル・インジェクション・モールド）等の方法を挙げることができる。尚、図1中、11はコイルパイプ6の外周を被覆するチューブである。

【0033】次に、上述した内視鏡用処置具の製造工程について説明する。予めコイルパイプ6に挿通された操作ワイヤ5a、5bの先端部5c、5dを鉗子カップ1a、1bに設けた連結穴1e、1fに各々連結し、次に、前記鉗子カップ1a、1bの軸穴1c、1dをピン3にカップ部分の刃が互いに向き合う状態で順に挿入する。

【0034】次に、操作ワイヤ5a、5bを、先端カバー2aの切欠凹部4aに通し、さらに前記コイル状溝7に外周を合わせる状態で前記コイルパイプ6を嵌め付け、コイルパイプ6を先端カバー2aの後端側に確実に取り付け。

【0035】次に、前記ピン3の細径部3bを前記穴8に嵌着する状態で先端カバー2bを鉗子カップ1a、1b及びコイルパイプ6上に被せ、先端カバー2aと先端カバー2bとの接合部分、外周部分が合致した状態とする。この場合も前記コイルパイプ6の外周を先端カバー2bの後端側の図示しないコイル状溝に確実に嵌め付ける。

【0036】次に、先端カバー2aと先端カバー2bとの接合部分、外周部分を一体的に固着する。この場合の固着方法としては、レーザー溶着、カシメ、ロー付け、超音波溶着、接着等の各固着方法を挙げることができる。

【0037】本実施の形態1によれば、上述した先端カバー2a、2bの形状を採用することにより、従来切削加工や鋳造加工のような面倒な加工方法で形成していた先端カバー2a、2bをプレス加工や鍛造加工といった板材からの比較的簡略な加工方法で形成することが可能となり、これにより、構成部品の製造コストを低減できる。

【0038】また、分かりやすい方向からの（一方の先端カバー2a側からの）順次組み付け工程で熟練を要することなく容易に内視鏡用処置具の一連の組み立てを遂行でき、組立工程の簡略化を図れる。

【0039】また、前記ピン3を段付き形状としているので、一对の鉗子カップ1a、1bの開閉操作性を確保しつつ、一对構成の先端カバー2a、2bの固着を容易に行うことができる。

【0040】さらに、組み立て工程の自動化にも対応でき、品質の安定した内視鏡用処置具を製造することが可能となる。

【0041】（実施の形態2）本発明の実施の形態2を図4、図5を参照して説明する。

【0042】本実施の形態2における内視鏡用処置具の基本的構成は上述した実施の形態1の場合と同様である

が、本実施の形態2においては、図4に示すように、先端カバー2aの前記ピン3の根元部外周と、先端カバー2bの前記穴8の外周とに、各々リング状の微小寸法の凸部13を形成したこと、及び、図5に示すように、先端カバー2aにおける前記鉗子カップ1aの腕部15aの外側が摺接する部分に、細幅でテーパー状の突起14を腕部15a、15bの開閉方向に沿って形成したことが特徴である。先端カバー2b側にも図示していないが同様なテーパー状の突起が設けられている。

【0043】前記リング状の凸部13は、鉗子カップ1a、1bの開閉動作の際の摩擦抵抗を少なくするように機能する。

【0044】また、前記テーパー状の突起14は、鉗子カップ1a、1bが閉じたときに、先端カバー2aと鉗子カップ1a、先端カバー2bと鉗子カップ1bとの間の各間隔のクリアランスを吸収して、鉗子カップ1a、1bのカップの刃の横ズレを抑える機能を発揮する。

【0045】

【発明の効果】請求項1記載の発明によれば、構成部品の製造コストを低減し、熟練を不要とする組立工程の実現が可能であり、さらに組み立て工程の自動化にも対応できる内視鏡用処置具の製造方法を提供できる。

【0046】請求項2記載の発明によれば、一对の鉗子カップの開閉操作性を確保しつつ、一对構成の先端カバーの固着を容易に行うことができる内視鏡用処置具の製造方法を提供できる。

【0047】請求項3記載の発明によればコイルパイプの一对の先端カバーへの取り付けを容易かつ確実に行うことができる内視鏡用処置具の製造方法を提供できる。

【0048】請求項4記載の発明によれば、前記突起を設けたことにより、一对の鉗子カップを閉じたときの両鉗子カップのカップの刃の横ズレを抑えることが可能な内視鏡用処置具を製造することができる製造方法を提供できる。

【図面の簡単な説明】

【図1】本発明の実施の形態1における内視鏡用処置具の先端部分の組み立て状態を示す概略部分断面図である。

【図2】本実施の形態1の先端カバーとピンとの固着状態を示す部分拡大図である。

【図3】本実施の形態1の内視鏡用処置具の構成部品を分解状態で示す斜視図である。

【図4】本発明の実施の形態2における内視鏡用処置具の鉗子カップ、先端カバー、ピンの組み付け状態を示す部分断面図である。

【図5】本発明の実施の形態2における内視鏡用処置具のテーパー突起を設けた先端カバーの部分斜視図である。

【図6】従来の内視鏡用生検鉗子の組み立て状態を示す概略断面図である。

【図7】従来の内視鏡用生検鉗子の他例の概略断面図である。

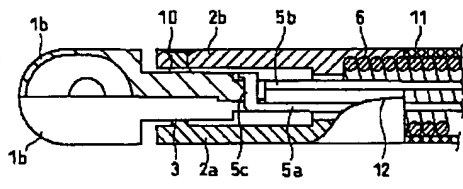
【図8】従来の内視鏡用生検鉗子の他例の鉗子カップが開状態の概略断面図である。

【符号の説明】

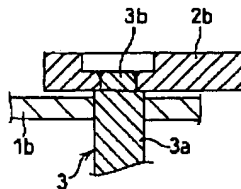
1 a 鉗子カップ  
1 b 鉗子カップ  
2 a 先端カバー  
2 b 先端カバー  
3 ピン  
4 a、4 b 切欠凹部

5 a、5 b 操作ワイヤ  
6 コイルパイプ  
7 a、7 b コイル状溝  
8 穴  
10 カシメ部  
11 チューブ  
12 接合部  
13 凸部  
14 突起  
10 15 a、15 b 腕部

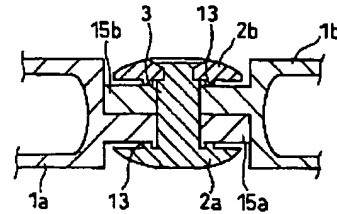
【図1】



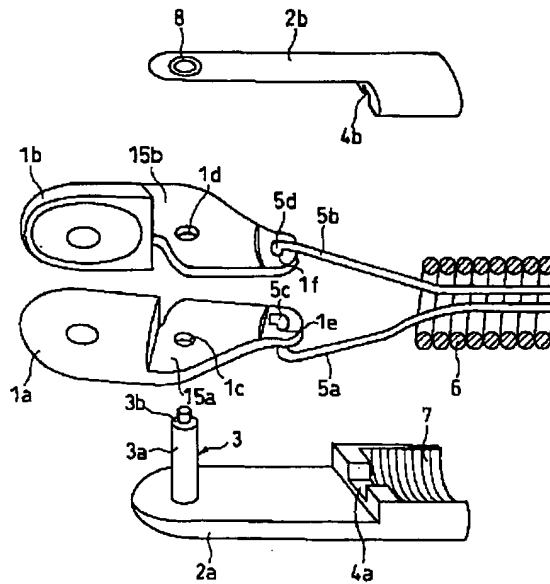
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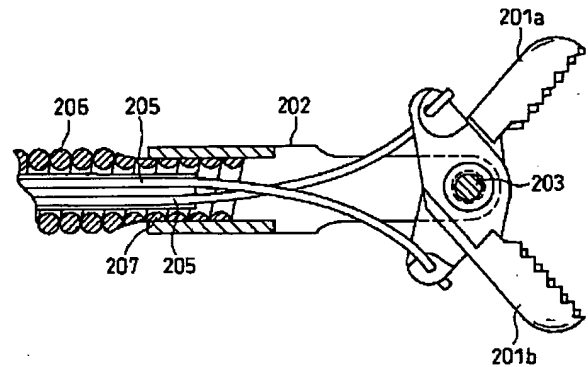
【図4】



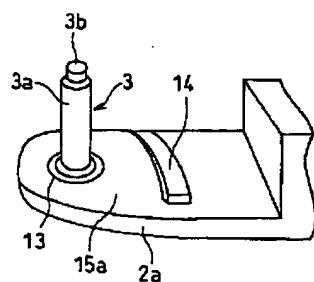
【図3】



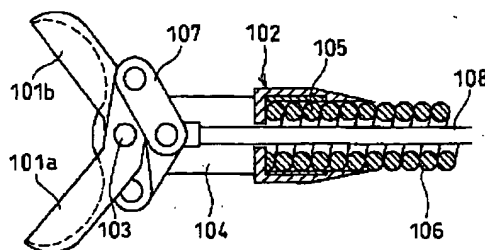
【図8】



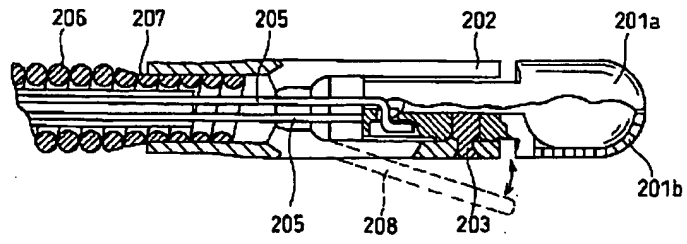
【図5】



【図6】



【図7】



# PATENT ABSTRACTS OF JAPAN

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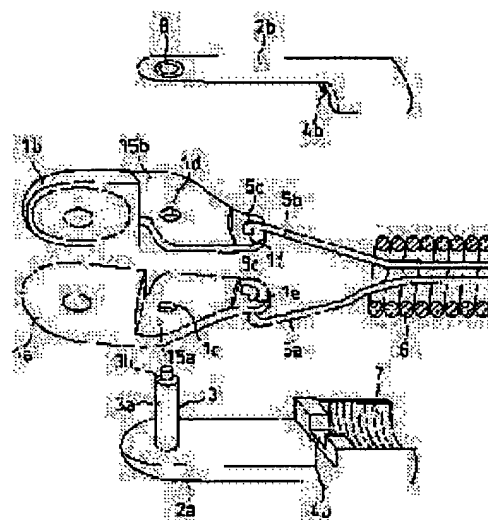
(72)Inventor : SHIMOJIMA KENJI

## (54) METHOD OF MANUFACTURING ENDOSCOPIC OPERATING TOOL

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a method of manufacturing endoscopic operating tools whose productivity can be raised and the manufacturing cost reduced by adopting a series of simple assembling processes.

**SOLUTION:** The method of manufacturing endoscopic operating tools for opening and closing operation by using a pair of operating wires 5a and 5b where a pair of forceps cups 1a and 1b are inserted through a coil pipe 6 in a displaceable manner includes a process to connect the tips of a pair of operating wires 5a and 5b with the respective posterior ends of a pair of forceps cups 1a and 1b, a process that enables the opening and closing by a pin 3 located on a forefront cover 2a at one end and inserted in order through the axial holes 1c and 1d provided with the above pair of forceps cups 1a and 1b, a process that allows the connections of a pair of the forefront covers 2a and 2b to match when a pair of forceps cups 1a, 1b and the end of the coil pipe 6 are sandwiched between a pair of the forefront covers 2a and 2b by linking a hole 8 cut in the forefront cover 2b of the other end with the protruded end of the above pin 3 in an exposed state of a pair of forceps cups 1a and 1b, and a process to integrally adhere the connections of a pair of the above forefront covers 2a and 2b.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision]

of rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The manufacture method of the endoscope disposal implement which carries out switching operation of the forceps cup of a couple with the operation wire of the couple inserted in the coil pipe possible [ displacement ] characterized by providing the following. The process which connects the point of the operation wire of the aforementioned couple with the back end section of the forceps cup of a couple respectively. The process which inserts in in order the axial hole prepared in the forceps cup of a couple from which the aforementioned operation wire was connected with the pivot in nose-of-cam covering of couple composition which while prepared in nose-of-cam covering, and supports it possible [ opening and closing ] by the aforementioned pivot. The process made into the state where put the edge of the forceps cup of a couple, and a coil pipe with nose-of-cam covering of the aforementioned couple by connecting with the projection edge of the aforementioned pivot the hole established in nose-of-cam covering of another side, and the joint of nose-of-cam covering of a couple agreed where the cup section of the forceps cup of a couple is exposed. The process which fixes the joint of nose-of-cam covering of the aforementioned couple in one.

[Claim 2] The pivot made to project from aforementioned one nose-of-cam covering is the manufacture method of the disposal implement for endoscopes according to claim 1 characterized by being the configuration with the stage which consists of the large diameter section in which the axial hole of the forceps cup of a couple is fitted, and a thin diameter section connected with the hole of nose-of-cam covering of another side.

[Claim 3] The manufacture method of the disposal implement for endoscopes according to claim 1 or 2 characterized by forming the coil-like slot for the aforementioned coil pipe wearing in the back end side inner circumference section of nose-of-cam covering of the aforementioned couple respectively.

[Claim 4] The manufacture method of the disposal implement for endoscopes according to claim 1 to 3 characterized by forming the salient which met in the opening-and-closing direction in the forceps cup in the aforementioned nose-of-cam covering, and the field of the side which counters.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the manufacture method of disposal implements for endoscopes, such as a bioptome.

[0002]

[Description of the Prior Art] Drawing 6 shows the point of the conventional bioptome for endoscopes. In the bioptome for endoscopes shown in drawing 6, 101a and 101b are the cups of the couple for extracting an explant, and are attached in the nose-of-cam covering 102 free [ opening and closing ] by the pin 103.

[0003] The cup insertion section 104 of the nose-of-cam covering 102 is formed in the configuration where the pillar-like material was halved from the anterior in the shape of a slit to lengthwise, and the back end section 105 is formed in tubed, and is connected with the coil pipe 106.

[0004] The operation wire 108 is connected with Cups 101a and 101b through the link mechanism 107, and the cups 101a and 101b of a couple use a pin 103 as a pivot by attitude operation of this operation wire 108, and it carries out switching action.

[0005] Generally, the nose-of-cam covering 102 is formed of cutting from the pillar-like material, and JP,6-327682,A is indicating the method of low attachment or soldering as the fixing method of such a pin 103, the nose-of-cam covering 102, and the coil pipe 106 and the nose-of-cam covering 102.

[0006] Moreover, JP,7-28854,B is indicating the method of performing fixing with the nose-of-cam covering 102, a pin 103, and the nose-of-cam covering 102 and the coil pipe 106 to laser welding.

[0007] It is U.S.Patent to drawing 7 and drawing 8. The example indicated by the No. 5,133,727 official report is shown. In drawing 7 and drawing 8, the nose-of-cam covering 202 is formed of metal casting, and the pin 203 is the nose-of-cam covering 202 and really formed.

[0008] Attachment by the nose-of-cam covering 202 of the coil pipe 206 in this case processes a narrow diameter, and is performing the point 207 of the coil pipe 206 by inserting in the interior of the back end of the nose-of-cam covering 202, and carrying out low attachment.

[0009] Moreover, after the cups 201a and 201b from which the operation wire 205 is connected respectively bend the portion 208 opposite to the side in which the pin 203 of the nose-of-cam covering 202 was formed and insert the \*\*\*\*\* cups 201a and 201b in a pin 203, they returned the portion 208 and have fixed the portions 208 of the aforementioned pin 203 and the nose-of-cam covering 202 with caulking etc.

[0010]

[Problem(s) to be Solved by the Invention] However, while the assembly operation which supports the forceps cups 101a and 101b of a couple by the pin 103 in the cup insertion section 104 of the nose-of-cam covering 102 takes skill in the case of the bioptome for endoscopes shown in drawing 6 In the forceps cups 101a and 101b of a couple, in order to carry out an opening-and-closing operation smoothly, a setup of the path clearance of the slit width of the cup insertion section 104 and the forceps cups 101a and 101b becomes important, and

troublesome assembly work is needed.

[0011] Moreover, in the case of the example shown in drawing 7 and drawing 8, the attachment work by handicrafts, such as \*\*\*\*\* of the coil pipe 206, low attachment, and soldering, is required also of junction to the coil pipe 206 and the nose-of-cam covering 202, and there are many problems in respect of productivity.

[0012] this invention is made in view of the above-mentioned situation, improves the structure of nose-of-cam covering, can carry out a series of assembly operation by sequential attachment of a component part, and the improvement in productivity and manufacturing-cost reduction are possible, and it aims at offering the manufacture method of disposal implements for endoscopes, such as a bioptome also with still easier automation correspondence.

[0013]

[Means for Solving the Problem] In the manufacture method of an endoscope disposal implement that invention according to claim 1 carries out switching operation of the forceps cup of a couple with the operation wire of the couple inserted in the coil pipe possible [ displacement ] The process which connects the point of the operation wire of the aforementioned couple with the back end section of the forceps cup of a couple respectively, The process which inserts in in order the axial hole prepared in the forceps cup of a couple from which the aforementioned operation wire was connected with the pivot in nose-of-cam covering of couple composition which while prepared in nose-of-cam covering, and supports it possible [ opening and closing ] by the aforementioned pivot, The edge of the forceps cup of a couple and a coil pipe is put with nose-of-cam covering of the aforementioned couple by connecting with the protrusion edge of the aforementioned pivot the hole established in nose-of-cam covering of another side, where the cup section of the forceps cup of a couple is exposed. It is characterized by including the process made into the state where the joint of nose-of-cam covering of a couple agreed, and the process which fixes the joint of nose-of-cam covering of the aforementioned couple in one.

[0014] According to this invention, by adopting nose-of-cam covering of the couple composition mentioned above, it becomes possible to form nose-of-cam covering currently formed by the troublesome processing method like cutting or casting processing before by the comparatively simple processing method from plates, such as press working of sheet metal and forging, and the manufacturing cost of a component part can be reduced.

[0015] moreover, intelligible — on the other hand — from Mukai — one by one (from one nose-of-cam covering side) — an attachment process — skill — \*\*\*\* — a series of assemblies of the disposal implement for endoscopes can be carried out easily without things, and simplification like an erector can be attained

[0016] Furthermore, it becomes possible to manufacture the disposal implement for the endoscopes by which could respond also to automation easily by adoption of a process by assembling, and quality was stabilized mentioned above.

[0017] The pivot which made invention according to claim 2 project from aforementioned one nose-of-cam covering in the manufacture method of the disposal implement for endoscopes according to claim 1 is characterized by being the configuration with the stage which consists of the large diameter section in which the axial hole of the forceps cup of a couple is fitted, and a thin diameter section connected with the hole of nose-of-cam covering of another side.

[0018] According to this invention, nose-of-cam covering of couple composition can be easily fixed by considering as the configuration with the stage which mentioned the aforementioned pivot above, securing the switching-operation nature of the forceps cup of a couple.

[0019] Invention according to claim 3 is characterized by forming the coil-like slot for the aforementioned coil pipe wearing respectively at the back end side inner circumference section of nose-of-cam covering of the aforementioned couple in the manufacture method of the disposal implement for endoscopes according to claim 1 or 2.

[0020] According to this invention, installation to nose-of-cam covering of the couple of the aforementioned coil pipe can be ensured [ easily and ] by having formed the aforementioned coil-like slot in the back end side inner circumference section of nose-of-cam covering of a couple respectively.

[0021] Invention according to claim 4 is characterized by forming the salient which met in the

opening-and-closing direction in the forceps cup in the aforementioned nose-of-cam covering, and the field of the side which counters in the manufacture method of the disposal implement for endoscopes according to claim 1 to 3.

[0022] According to this invention, by having prepared the aforementioned salient, the path clearance between the aforementioned nose-of-cam covering and a forceps cup is absorbed, and it becomes possible to suppress horizontal gap of the edge of the cup of both the forceps cup when closing the forceps cup of a couple.

[0023]

[Embodiments of the Invention] Hereafter, the gestalt of implementation of the manufacture method of the disposal implement for endoscopes of this invention is explained with reference to drawing 1 or drawing 5.

[0024] (Gestalt 1 of operation) Drawing 1 is the fragmentary sectional view of the assembly state for a point of the disposal implement for endoscopes in the gestalt 1 of this operation. Drawing 2 is the elements on larger scale showing an example of the fixing state of nose-of-cam covering and the pin which is a pivot. Drawing 3 is the decomposition perspective diagram showing each component part for a point of the disposal implement for endoscopes.

[0025] In the disposal implement for endoscopes shown in drawing 1, the pin 3 used as the pivot for opening and closing of the forceps cups 1a and 1b of a couple is really set up by formation by one nose-of-cam covering 2a of the nose-of-cam coverings 2a and 2b of a couple.

[0026] This pin 3 serves as a configuration with the stage which consists of large diameter section 3a and thin diameter section 3b, large diameter section 3a penetrates the axial holes 1c and 1d prepared in the forceps cups 1a and 1b, and thin diameter section 3b is set as the path attached and connected with the hole 8 which was established in nose-of-cam covering 2b, and which is mentioned later.

[0027] Moreover, the linear dimension of large diameter section 3a in the configuration with the stage of a pin 3 is set as the size with the path clearance to the nose-of-cam coverings 2a and 2b required for the switching action of the forceps cups 1a and 1b.

[0028] The hole 8 is formed in the position corresponding to the position of the aforementioned pin 3, and, as for the configuration, various modes are adopted as nose-of-cam covering 2b of another side by the fixing method with thin diameter section 3b of a pin 3.

[0029] That is, in adopting the welding method by laser beam irradiation as shown in drawing 1, in adopting the caulking method which forms the caulking section 10 in nose-of-cam covering 2b, as shows the aforementioned hole 8 to drawing 2 in the shape of an acetabuliform again, it makes the aforementioned hole 8 into the Zagury hole configuration. In the case of which [ these ], the protrusion edge of a pin 3 projects and bends to the periphery side of nose-of-cam covering 2b after a fixing end, and it changes into a state.

[0030] In the inner circumference section of each back end portion of the aforementioned nose-of-cam coverings 2a and 2b The notch crevices 4a and 4b for inserting in the operation wires 5a and 5b are formed. Furthermore, the coil-like slot 7 (not shown [ the coil-like slot 7 by the side of nose-of-cam covering 2b ]) which has the inner circumference configuration of the shape of a coil whose periphery and configuration of the coil pipe 6 correspond is formed in the back portion rather than the notch crevices 4a and 4b.

[0031] Moreover, when these noses-of-cam coverings 2a and 2b are attached in the state where it is crowded on both sides of the coil pipe 6, the periphery of the aforementioned nose-of-cam coverings 2a and 2b is formed so that a joint 12 may be in a junction state and may present the shape of a cylinder.

[0032] As the formation method of the nose-of-cam coverings 2a and 2b of the couple which carried out such a configuration, methods, such as forging, a press, casting, and MIM (metal injection molding), are mentioned, for example, and things are made. In addition, 11 are a tube which covers the periphery of the coil pipe 6 among drawing 1.

[0033] Next, the manufacturing process of the disposal implement for endoscopes mentioned above is explained. It connects with the connection holes 1e and 1f which formed the points 5c and 5d of the operation wires 5a and 5b beforehand inserted in the coil pipe 6 in the forceps cups 1a and 1b respectively, next the axial holes 1c and 1d of the aforementioned forceps cups

1a and 1b are inserted in order in the state where the edge of a cup portion faces a pin 3 mutually.

[0034] Next, the aforementioned coil pipe 6 is inserted in notch crevice 4 of nose-of-cam covering 2a for the operation wires 5a and 5b in through and the state of doubling a periphery with the aforementioned coil-like slot 7 further, and the coil pipe 6 is certainly attached in the back end side of nose-of-cam covering 2a.

[0035] Next, nose-of-cam covering 2b is put on the forceps cups 1a and 1b and the coil pipe 6 in the state of attaching thin diameter section 3b of the aforementioned pin 3 in the aforementioned hole 8, and it considers as the state where a part for the joint of nose-of-cam covering 2a and nose-of-cam covering 2b and the periphery portion agreed. It inserts in the coil-like slot where the back end side of nose-of-cam covering 2b does not illustrate the periphery of the aforementioned coil pipe 6 in this case, either certainly.

[0036] Next, a part for the joint of nose-of-cam covering 2a and nose-of-cam covering 2b and a periphery portion are fixed in one. As the fixing method in this case, each fixing method, such as laser welding, caulking, low attachment, ultrasonic welding, and adhesion, can be mentioned.

[0037] According to the gestalt 1 of this operation, by adopting the configuration of the nose-of-cam coverings 2a and 2b mentioned above, it becomes possible to form the nose-of-cam coverings 2a and 2b currently formed by the troublesome processing method like cutting or casting processing before by the comparatively simple processing method from plates, such as press working of sheet metal and forging, and, thereby, the manufacturing cost of a component part can be reduced.

[0038] moreover, intelligible — on the other hand — from Mukai — one by one (from one nose-of-cam covering 2a side) — an attachment process — skill — \*\*\*\* — a series of assemblies of the disposal implement for endoscopes can be carried out easily without things, and simplification like an erector can be attained

[0039] Moreover, nose-of-cam coverings 2a and 2b of couple composition can be fixed easily, securing the switching-operation nature of the forceps cups 1a and 1b of a couple, since the aforementioned pin 3 is made into the configuration with the stage.

[0040] Furthermore, it can respond also to the automation like an assembler and it becomes possible to manufacture the disposal implement for endoscopes by which quality was stabilized.

[0041] (Gestalt 2 of operation) The gestalt 2 of operation of this invention is explained with reference to drawing 4 and drawing 5.

[0042] Although the fundamental composition of the disposal implement for endoscopes in the gestalt 2 of this operation is the same as that of the case of the gestalt 1 of operation mentioned above In the gestalt 2 of this operation, as are shown in drawing 4, and shown in having formed the heights 13 of a minute ring-like size in the root outside periphery of the aforementioned pin 3 of nose-of-cam covering 2a, and the periphery of the aforementioned hole 8 of nose-of-cam covering 2b respectively, and drawing 5 It is the feature to have formed the taper-like salient 14 in the portion into which the outside of arm 15a of the aforementioned forceps cup 1a in nose-of-cam covering 2a \*\*\*\*s along the opening-and-closing direction of Arms 15a and 15b with the narrow width. Although not illustrated to the nose-of-cam covering 2b side, either, the salient of the shape of same taper is prepared.

[0043] The heights 13 of the shape of an aforementioned ring function as lessening frictional resistance in the case of the switching action of the forceps cups 1a and 1b.

[0044] Moreover, when the forceps cups 1a and 1b close, the salient 14 of the shape of an aforementioned taper absorbs the path clearance of each interval between nose-of-cam covering 2a, forceps cup 1a, and nose-of-cam covering 2b and forceps cup 1b, and demonstrates the function to suppress horizontal gap of the edge of the cup of the forceps cups 1a and 1b.

[0045]

[Effect of the Invention] According to invention according to claim 1, the manufacture method of the disposal implement for endoscopes which can reduce the manufacturing cost of a component part, the realization like the erector who makes skill unnecessary is possible, assembles further, and can respond also to automation of a process can be offered.

[0046] According to invention according to claim 2, the manufacture method of the disposal implement for endoscopes which can fix nose-of-cam covering of couple composition easily can be offered, securing the switching-operation nature of the forceps cup of a couple.

[0047] According to invention according to claim 3, the manufacture method of the disposal implement for endoscopes easily and that installation to nose-of-cam covering of the couple of a coil pipe can be ensured can be offered.

[0048] According to invention according to claim 4, the manufacture method that the disposal implement for endoscopes which can suppress horizontal gap of the edge of the cup of both the forceps cup when closing the forceps cup of a couple can be manufactured can be offered by having prepared the aforementioned salient.

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**TECHNICAL FIELD**

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[The technical field to which invention belongs] this invention relates to the manufacture method of disposal implements for endoscopes, such as a biptome.

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PRIOR ART

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[Description of the Prior Art] Drawing 6 shows the point of the conventional bioptome for endoscopes. In the bioptome for endoscopes shown in drawing 6, 101a and 101b are the cups of the couple for extracting an explant, and are attached in the nose-of-cam covering 102 free [ opening and closing ] by the pin 103.

[0003] The cup insertion section 104 of the nose-of-cam covering 102 is formed in the configuration where the pillar-like material was halved from the anterior in the shape of a slit to lengthwise, and the back end section 105 is formed in tubed, and is connected with the coil pipe 106.

[0004] The operation wire 108 is connected with Cups 101a and 101b through the link mechanism 107, and the cups 101a and 101b of a couple use a pin 103 as a pivot by attitude operation of this operation wire 108, and it carries out switching action.

[0005] Generally, the nose-of-cam covering 102 is formed of cutting from the pillar-like material, and JP,6-327682,A is indicating the method of low attachment or soldering as the fixing method of such a pin 103, the nose-of-cam covering 102, and the coil pipe 106 and the nose-of-cam covering 102.

[0006] Moreover, JP,7-28854,B is indicating the method of performing fixing with the nose-of-cam covering 102, a pin 103, and the nose-of-cam covering 102 and the coil pipe 106 to laser welding.

[0007] It is U.S.Patent to drawing 7 and drawing 8. The example indicated by the No. 5,133,727 official report is shown. In drawing 7 and drawing 8, the nose-of-cam covering 202 is formed of metal casting, and the pin 203 is the nose-of-cam covering 202 and really formed.

[0008] Attachment by the nose-of-cam covering 202 of the coil pipe 206 in this case processes a narrow diameter, and is performing the point 207 of the coil pipe 206 by inserting in the interior of the back end of the nose-of-cam covering 202, and carrying out low attachment.

[0009] Moreover, after the cups 201a and 201b from which the operation wire 205 is connected respectively bend the portion 208 opposite to the side in which the pin 203 of the nose-of-cam covering 202 was formed and insert the \*\*\*\* cups 201a and 201b in a pin 203, they returned the portion 208 and have fixed the portions 208 of the aforementioned pin 203 and the nose-of-cam covering 202 with caulking etc.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] According to invention according to claim 1, the manufacture method of the disposal implement for endoscopes which can reduce the manufacturing cost of a component part, the realization like the erector who makes skill unnecessary is possible, assembles further, and can respond also to automation of a process can be offered.

[0046] According to invention according to claim 2, the manufacture method of the disposal implement for endoscopes which can fix nose-of-cam covering of couple composition easily can be offered, securing the switching-operation nature of the forceps cup of a couple.

[0047] According to invention according to claim 3, the manufacture method of the disposal implement for endoscopes easily and that installation to nose-of-cam covering of the couple of a coil pipe can be ensured can be offered.

[0048] According to invention according to claim 4, the manufacture method that the disposal implement for endoscopes which can suppress horizontal gap of the edge of the cup of both the forceps cup when closing the forceps cup of a couple can be manufactured can be offered by having prepared the aforementioned salient.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, while the assembly operation which supports the forceps cups 101a and 101b of a couple by the pin 103 in the cup insertion section 104 of the nose-of-cam covering 102 takes skill in the case of the bioptome for endoscopes shown in drawing 6 In the forceps cups 101a and 101b of a couple, in order to carry out an opening-and-closing operation smoothly, a setup of the path clearance of the slit width of the cup insertion section 104 and the forceps cups 101a and 101b becomes important, and troublesome assembly work is needed.

[0011] Moreover, in the case of the example shown in drawing 7 and drawing 8 , the attachment work by handicrafts, such as \*\*\*\*\* of the coil pipe 206, low attachment, and soldering, is required also of junction to the coil pipe 206 and the nose-of-cam covering 202, and there are many problems in respect of productivity.

[0012] this invention is made in view of the above-mentioned situation, improves the structure of nose-of-cam covering, can carry out a series of assembly operation by sequential attachment of a component part, and the improvement in productivity and manufacturing-cost reduction are possible, and it aims at offering the manufacture method of disposal implements for endoscopes, such as a bioptome also with still easier automation correspondence.

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MEANS

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[Means for Solving the Problem] In the manufacture method of an endoscope disposal implement that invention according to claim 1 carries out switching operation of the forceps cup of a couple with the operation wire of the couple inserted in the coil pipe possible [ displacement ] The process which connects the point of the operation wire of the aforementioned couple with the back end section of the forceps cup of a couple respectively, The process which inserts in in order the axial hole prepared in the forceps cup of a couple from which the aforementioned operation wire was connected with the pivot in nose-of-cam covering of couple composition which while prepared in nose-of-cam covering, and supports it possible [ opening and closing ] by the aforementioned pivot, The edge of the forceps cup of a couple and a coil pipe is put with nose-of-cam covering of the aforementioned couple by connecting with the protrusion edge of the aforementioned pivot the hole established in nose-of-cam covering of another side, where the cup section of the forceps cup of a couple is exposed. It is characterized by including the process made into the state where the joint of nose-of-cam covering of a couple agreed, and the process which fixes the joint of nose-of-cam covering of the aforementioned couple in one.

[0014] According to this invention, by adopting nose-of-cam covering of the couple composition mentioned above, it becomes possible to form nose-of-cam covering currently formed by the troublesome processing method like cutting or casting processing before by the comparatively simple processing method from plates, such as press working of sheet metal and forging, and the manufacturing cost of a component part can be reduced.

[0015] moreover, intelligible — on the other hand — from Mukai — one by one (from one nose-of-cam covering side) — an attachment process — skill — \*\*\* — a series of assemblies of the disposal implement for endoscopes can be carried out easily without things, and simplification like an erector can be attained

[0016] Furthermore, it becomes possible to manufacture the disposal implement for the endoscopes by which could respond also to automation easily by adoption of a process by assembling, and quality was stabilized mentioned above.

[0017] The pivot which made invention according to claim 2 project from aforementioned one nose-of-cam covering in the manufacture method of the disposal implement for endoscopes according to claim 1 is characterized by being the configuration with the stage which consists of the large diameter section in which the axial hole of the forceps cup of a couple is fitted, and a thin diameter section connected with the hole of nose-of-cam covering of another side.

[0018] According to this invention, nose-of-cam covering of couple composition can be easily fixed by considering as the configuration with the stage which mentioned the aforementioned pivot above, securing the switching-operation nature of the forceps cup of a couple.

[0019] Invention according to claim 3 is characterized by forming the coil-like slot for the aforementioned coil pipe wearing respectively at the back end side inner circumference section of nose-of-cam covering of the aforementioned couple in the manufacture method of the disposal implement for endoscopes according to claim 1 or 2.

[0020] According to this invention, installation to nose-of-cam covering of the couple of the aforementioned coil pipe can be ensured [ easily and ] by having formed the aforementioned coil-like slot in the back end side inner circumference section of nose-of-cam covering of a

couple respectively.

[0021] Invention according to claim 4 is characterized by forming the salient which met in the opening-and-closing direction in the forceps cup in the aforementioned nose-of-cam covering, and the field of the side which counters in the manufacture method of the disposal implement for endoscopes according to claim 1 to 3.

[0022] According to this invention, by having prepared the aforementioned salient, the path clearance between the aforementioned nose-of-cam covering and a forceps cup is absorbed, and it becomes possible to suppress horizontal gap of the edge of the cup of both the forceps cup when closing the forceps cup of a couple.

[0023]

[Embodiments of the Invention] Hereafter, the gestalt of implementation of the manufacture method of the disposal implement for endoscopes of this invention is explained with reference to drawing 1 or drawing 5.

[0024] (Gestalt 1 of operation) Drawing 1 is the fragmentary sectional view of the assembly state for a point of the disposal implement for endoscopes in the gestalt 1 of this operation. Drawing 2 is the elements on larger scale showing an example of the fixing state of nose-of-cam covering and the pin which is a pivot. Drawing 3 is the decomposition perspective diagram showing each component part for a point of the disposal implement for endoscopes.

[0025] In the disposal implement for endoscopes shown in drawing 1, the pin 3 used as the pivot for opening and closing of the forceps cups 1a and 1b of a couple is really set up by formation by one nose-of-cam covering 2a of the nose-of-cam coverings 2a and 2b of a couple.

[0026] This pin 3 serves as a configuration with the stage which consists of large diameter section 3a and thin diameter section 3b, large diameter section 3a penetrates the axial holes 1c and 1d prepared in the forceps cups 1a and 1b, and thin diameter section 3b is set as the path attached and connected with the hole 8 which was established in nose-of-cam covering 2b, and which is mentioned later.

[0027] Moreover, the linear dimension of large diameter section 3a in the configuration with the stage of a pin 3 is set as the size with the path clearance to the nose-of-cam coverings 2a and 2b required for the switching action of the forceps cups 1a and 1b.

[0028] The hole 8 is formed in the position corresponding to the position of the aforementioned pin 3, and, as for the configuration, various modes are adopted as nose-of-cam covering 2b of another side by the fixing method with thin diameter section 3b of a pin 3.

[0029] That is, in adopting the welding method by laser beam irradiation as shown in drawing 1, in adopting the caulking method which forms the caulking section 10 in nose-of-cam covering 2b, as shows the aforementioned hole 8 to drawing 2 in the shape of an acetabuliform again, it makes the aforementioned hole 8 into the Zagury hole configuration. In the case of which [ these ], the protrusion edge of a pin 3 projects and bends to the periphery side of nose-of-cam covering 2b after a fixing end, and it changes into a state.

[0030] In the inner circumference section of each back end portion of the aforementioned nose-of-cam coverings 2a and 2b The notch crevices 4a and 4b for inserting in the operation wires 5a and 5b are formed. Furthermore, the coil-like slot 7 (not shown [ the coil-like slot 7 by the side of nose-of-cam covering 2b ]) which has the inner circumference configuration of the shape of a coil whose periphery and configuration of the coil pipe 6 correspond is formed in the back portion rather than the notch crevices 4a and 4b.

[0031] Moreover, when these noses-of-cam coverings 2a and 2b are attached in the state where it is crowded on both sides of the coil pipe 6, the periphery of the aforementioned nose-of-cam coverings 2a and 2b is formed so that a joint 12 may be in a junction state and may present the shape of a cylinder.

[0032] As the formation method of the nose-of-cam coverings 2a and 2b of the couple which carried out such a configuration, methods, such as forging, a press, casting, and MIM (metal injection molding), are mentioned, for example, and things are made. In addition, 11 are a tube which covers the periphery of the coil pipe 6 among drawing 1.

[0033] Next, the manufacturing process of the disposal implement for endoscopes mentioned above is explained. It connects with the connection holes 1e and 1f which formed the points 5c

and 5d of the operation wires 5a and 5b beforehand inserted in the coil pipe 6 in the forceps cups 1a and 1b respectively, next the axial holes 1c and 1d of the aforementioned forceps cups 1a and 1b are inserted in order in the state where the edge of a cup portion faces a pin 3 mutually.

[0034] Next, the aforementioned coil pipe 6 is inserted in notch crevice 4 of nose-of-cam covering 2a for the operation wires 5a and 5b in through and the state of doubling a periphery with the aforementioned coil-like slot 7 further, and the coil pipe 6 is certainly attached in the back end side of nose-of-cam covering 2a.

[0035] Next, nose-of-cam covering 2b is put on the forceps cups 1a and 1b and the coil pipe 6 in the state of attaching thin diameter section 3b of the aforementioned pin 3 in the aforementioned hole 8, and it considers as the state where a part for the joint of nose-of-cam covering 2a and nose-of-cam covering 2b and the periphery portion agreed. It inserts in the coil-like slot where the back end side of nose-of-cam covering 2b does not illustrate the periphery of the aforementioned coil pipe 6 in this case, either certainly.

[0036] Next, a part for the joint of nose-of-cam covering 2a and nose-of-cam covering 2b and a periphery portion are fixed in one. As the fixing method in this case, each fixing method, such as laser welding, caulking, low attachment, ultrasonic welding, and adhesion, can be mentioned.

[0037] According to the gestalt 1 of this operation, by adopting the configuration of the nose-of-cam coverings 2a and 2b mentioned above, it becomes possible to form the nose-of-cam coverings 2a and 2b currently formed by the troublesome processing method like cutting or casting processing before by the comparatively simple processing method from plates, such as press working of sheet metal and forging, and, thereby, the manufacturing cost of a component part can be reduced.

[0038] moreover, intelligible — on the other hand — from Mukai — one by one (from one nose-of-cam covering 2a side) — an attachment process — skill — \*\*\*\* — a series of assemblies of the disposal implement for endoscopes can be carried out easily without things, and simplification like an erector can be attained

[0039] Moreover, nose-of-cam coverings 2a and 2b of couple composition can be fixed easily, securing the switching-operation nature of the forceps cups 1a and 1b of a couple, since the aforementioned pin 3 is made into the configuration with the stage.

[0040] Furthermore, it can respond also to the automation like an assembler and it becomes possible to manufacture the disposal implement for endoscopes by which quality was stabilized.

[0041] (Gestalt 2 of operation) The gestalt 2 of operation of this invention is explained with reference to drawing 4 and drawing 5.

[0042] Although the fundamental composition of the disposal implement for endoscopes in the gestalt 2 of this operation is the same as that of the case of the gestalt 1 of operation mentioned above In the gestalt 2 of this operation, as are shown in drawing 4, and shown in having formed the heights 13 of a minute ring-like size in the root outside periphery of the aforementioned pin 3 of nose-of-cam covering 2a, and the periphery of the aforementioned hole 8 of nose-of-cam covering 2b respectively, and drawing 5 It is the feature to have formed the taper-like salient 14 in the portion into which the outside of arm 15a of the aforementioned forceps cup 1a in nose-of-cam covering 2a \*\*\*\*s along the opening-and-closing direction of Arms 15a and 15b with the narrow width. Although not illustrated to the nose-of-cam covering 2b side, either, the salient of the shape of same taper is prepared.

[0043] The heights 13 of the shape of an aforementioned ring function as lessening frictional resistance in the case of the switching action of the forceps cups 1a and 1b.

[0044] Moreover, when the forceps cups 1a and 1b close, the salient 14 of the shape of an aforementioned taper absorbs the path clearance of each interval between nose-of-cam covering 2a, forceps cup 1a, and nose-of-cam covering 2b and forceps cup 1b, and demonstrates the function to suppress horizontal gap of the edge of the cup of the forceps cups 1a and 1b.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1] It is the outline fragmentary sectional view showing the assembly state for a point of the disposal implement for endoscopes in the gestalt 1 of operation of this invention.

[Drawing 2] They are the elements on larger scale showing the fixing state of nose-of-cam covering of the gestalt 1 of this operation, and a pin.

[Drawing 3] It is the perspective diagram showing the component part of the disposal implement for endoscopes of the gestalt 1 of this operation in the state of decomposition.

[Drawing 4] It is the fragmentary sectional view showing the attachment state of the forceps cup of the disposal implement for endoscopes in the gestalt 2 of operation of this invention, nose-of-cam covering, and a pin.

[Drawing 5] It is the partial perspective diagram of nose-of-cam covering which prepared the taper salient of the disposal implement for endoscopes in the gestalt 2 of operation of this invention.

[Drawing 6] It is the outline cross section showing the assembly state of the conventional bioptome for endoscopes.

[Drawing 7] It is the outline cross section of the other examples of the conventional bioptome for endoscopes.

[Drawing 8] The forceps cup of the other examples of the conventional bioptome for endoscopes is the outline cross section of an open state.

**[Description of Notations]**

- 1a Forceps cup
- 1b Forceps cup
- 2a Nose-of-cam covering
- 2b Nose-of-cam covering
- 3 Pin
- 4a, 4b Notch crevice
- 5a, 5b Operation wire
- 6 Coil Pipe
- 7a, 7b Coil-like slot
- 8 Hole
- 10 Caulking Section
- 11 Tube
- 12 Joint
- 13 Heights
- 14 Salient
- 15a, 15b Arm

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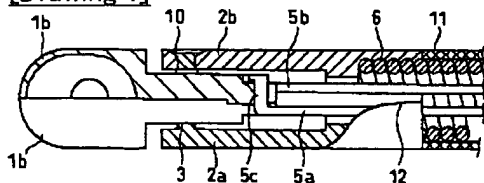
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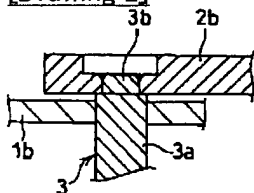
DRAWINGS

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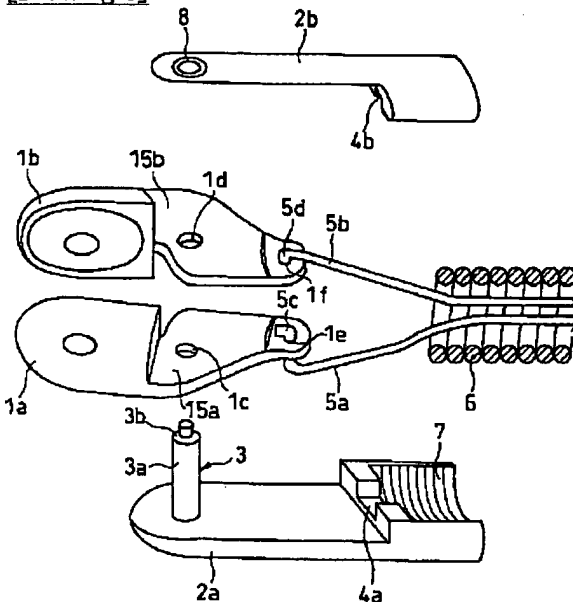
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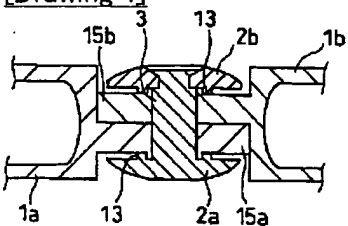
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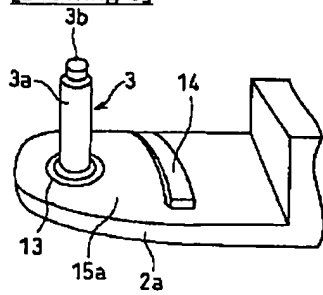
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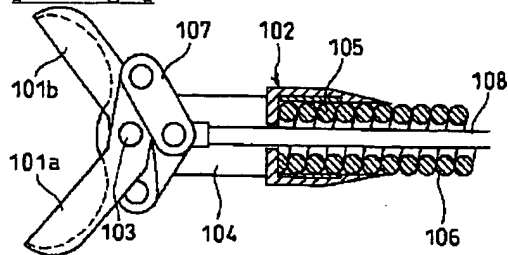
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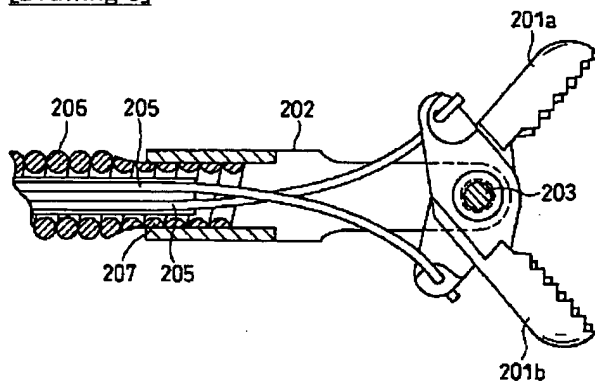
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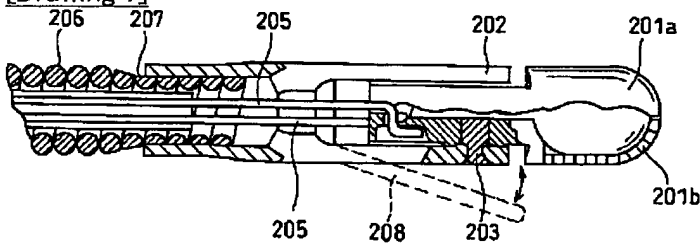
[Drawing 6]



[Drawing 8]



[Drawing 7]



[Translation done.]